Claims:

1. A printable substrate comprising at least one high melt-strength, oriented polypropylene foam layer having an ink-receptive surface.

2. The substrate of claim 1 wherein the high melt-strength polymer has a melt strength of of 25 to 60 cN at 190°C.

3. The substrate of claim 1 wherein said orientation is biaxial.

4. The substrate of claim 1 wherein said polymer is a high melt-strength polypropylene comprising homo- and copolymers containing 50 weight percent or more propylene monomer units.

5. The substrate of claim 4 wherein said polypropylene copolymers are selected from random, block, and grafted copolymers of propylene and an α–olefin selected from the group consisting of C3-C8 α–olefins and C4-C10 dienes.

6. The substrate of claim 1 wherein said high melt strength polypropylene comprises a blend of a major amount of said high melt strength polypropylene and a minor amount of another semicrystalline or amorphous polymer.

7. The substrate of claim 1 wherein said high melt strength polypropylene further comprises an inorganic additive.

8. The substrate of claim 3 wherein said orientation is at least 9 X total draw ratio.

9. The substrate of claim 1 wherein said foam, prior to orientation, has an average cell dimension of 50 micrometers or less.

10. The substrate of claim 1 further comprising at least one thermoplastic film layer.

11. A multilayer substrate of claim 10 comprising said thermoplastic film layer and said high melt strength foam layer having a bending stiffness of at least 40 Newtons.

12. The substrate of claim 10 having two high melt-strength, oriented polymer foam layers and a thermoplastic film layer disposed therebetween.

13. The substrate of claim 10 wherein said thermoplastic film layer further comprises one or more inorganic particulate additives.

14. The substrate of claim 1 wherein ink receptive surface comprises a corona-treated foam surface.

15. The substrate of claim 1 wherein ink receptive surface comprises an ink-receptive coating on a surface of said foam layer.

16. The substrate of claim 1 wherein ink receptive surface comprises an ink-receptive film layer

17. The substrate of claim 16 wherein said ink-receptive film layer is coextruded with said foam layer.

18. The substrate of claim 16 wherein said ink-receptive film layer is laminated to said foam layer.

19. The substrate of claim 16 wherein said ink-receptive film layer is selected from the group of ethylene/acrylic acid copolymers, ethylene/vinyl acetate copolymers, ethylene/vinyl acetate/carbon monoxide terpolymers, maleated polypropylene, and polyurethane.

20. The substrate of claim 1 wherein said ink-receptive layer comprises a corona treated thermoplastic film layer.

21. The substrate of claim 1 wherein said ink-receptive layer comprises an ink-receptive coating on the surface of a thermoplastic polymer.

22. The substrate of claim 1 having at least one embossment thereon.

23. The substrate of claim 22, wherein said embossment provides a translucent aperture through the thickness of said foam layer.

24. The substrate of claim 10 wherein said thermoplastic film layer is colored.

25. The substrate of claim 10 wherein said thermoplastic film layer is oriented.

26. The substrate of claim 10 wherein said thermoplastic film layer is unoriented.

27. The ink receptive substrate of claim 1 wherein said foam layer is prepared by:

(1) mixing at least one high melt strength polypropylene and at least one blowing agent in an apparatus having an exit shaping orifice at a temperature and pressure sufficient to form a melt mixture wherein the blowing agent is uniformly distributed throughout the polypropylene;

(2) reducing the temperature of the melt mixture at the exit of the apparatus to an exit temperature that is no more than 30°C above the melt temperature of the neat polypropylene while maintaining the melt mixture at a pressure sufficient to prevent foaming;

(3) passing the mixture through said exit shaping orifice and exposing the mixture to atmospheric pressure, whereby the blowing agent expands causing cell formation resulting in foam formation, and

(4) orienting said foam.

28. The substrate of claim 1 further comprising a non-foam layer.

29. The substrate of claim 28 wherein said non-foam layer comprises a thermoplastic film layer.

30. The substrate of claim 29 wherein said ink-receptive surface comprises corona treatment of said thermoplastic film layer.

31. The substrate of claim 29 wherein said ink-receptive surface comprises an ink-receptive coating on said thermoplastic film layer.

32. The substrate of claim 29 wherein said thermoplastic film layer is an inherently ink-receptive surface.

33. The substrate of claim 29 wherein said ink-receptive surface comprises corona treatment of said foam layer.

34. The substrate of claim 29 wherein said ink-receptive surface comprises an ink-receptive coating on said foam layer.

35. The substrate of claim 29 wherein said thermoplastic film layer comprises a stiff polymer layer to impart bending stiffness to the substrate.

36. A security document comprising the substrate of claim 1.

37. A process for making an ink-receptive article comprising the steps of:

(1) providing an oriented, high melt-strength polypropylene foam, and

(2) providing an ink-receptive surface on at least one major surface of the foam.

38. The process of claim 37 wherein said oriented, high melt-strength polypropylene foam is prepared by the steps of:

(1) mixing at least one high melt strength polypropylene and at least one blowing agent in an apparatus having an exit shaping orifice at a temperature and pressure sufficient to form a melt mixture wherein the blowing agent is uniformly distributed throughout the polypropylene;

(2) reducing the temperature of the melt mixture at the exit of the apparatus to an exit temperature that is no more than 30°C above the melt temperature of the neat polypropylene while maintaining the melt mixture at a pressure sufficient to prevent foaming;

(3) passing the mixture through said exit shaping orifice and exposing the mixture to atmospheric pressure, whereby the blowing agent expands causing cell formation resulting in foam formation, and

(4) orienting said foam.

39. The process of claim 37 wherein said foam is biaxially oriented.

40. The process of claim 39 wherein said orientation is at or above the alpha transition temperature and below the melt temperature of the polypropylene.

41. The process of claim 39 wherein said orientation is simultaneous biaxial.

42. The process of claim 37 wherein said high melt-strength polypropylene comprises homo- and copolymers containing 50 weight percent or more propylene monomer units, and having a melt strength in the range of 25 to 60 cN at 190°C.

43. The process of claim 42 wherein said polypropylene copolymers are selected from random, block, and grafted copolymers of propylene and an α–olefin selected from the group consisting of C3-C8 α–olefins and C4-C10 dienes.

44. The process of claim 37 wherein said mixture comprises a blowing agent and a blend of a major amount of a high melt strength polypropylene and a minor amount of a semicrystalline or amorphous polymer.

45. The process of claim 37 wherein said extruding step comprises extruding said mixture at a pressure $\geq$2500 psi (17.2 Mpa).

46. The process of claim 41 wherein said orientation is 3 to 70x total draw ratio.

47. The process of claim 37 wherein said blowing agent is a chemical blowing agent.

48. The process of claim 47 further comprising the step of elevating the temperature of the melt mixture to a temperature sufficient to activate said chemical blowing agent prior to step (2).

49. The process of claim 37 wherein said foam comprises 70% or greater closed cells prior to orientation.

50. The process of claim 37 wherein said foam, prior to orientation, has an average cell dimension of 50 micrometers or less.

51. The process of claim 37 wherein ink receptive surface comprises a corona-treated foam or film surface.

52. The process of claim 37 wherein ink receptive surface comprises an ink-receptive coating on a surface of said foam layer.

53. The process of claim 37 wherein ink receptive surface comprises an ink-receptive film layer

54. The process of claim 53 wherein said ink-receptive film layer is coextruded with said foam layer.

55. The process of claim 53 wherein said ink-receptive film layer is laminated to said foam layer.

56. The process of claim 52 wherein said ink-receptive film layer is selected from the group of ethylene/acrylic acid copolymers, ethylene/vinyl acetate copolymers, maleated polypropylene, ethylene/vinyl acetate/carbon monoxide terpolymers, and polyurethanes.